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# Video Diary as a Means for Data Gathering with Children - Encountering Identities in the Making

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**ABSTRACT**

This paper examines video diaries gathered from 10—11-year-old pupils with the aim of inquiring children's technology use in their everyday life. A discourse lens is utilized to provide novel insights into the nature and use of videos and diaries in Human Computer Interaction (HCI) research and design. The paper shows how the children, given the same assignment, produced their video diaries from a range of different positions such as 'a diarist', 'a news anchor' and 'a stage performer', and through a variety of widely known genres such as 'an intimate, confessional diary entry', 'a news broadcast', and 'a homework assignment'. The children also smoothly moved between the positions and genres sometimes changing them several times even during one video clip. Our findings bear implications on two types of HCI research: firstly, studies using diaries for research and design purposes and, secondly, studies interested in videos produced by the research subjects. The paper emphasizes videos and diaries as a multifaceted resource not only revealing facts from the producers' lives but also playful experimenting with different positions and genres highlighting constant identity exploration and construction going on during the creation of the data. During the data analysis it is useful to consider within what kind of positionings and genres the pieces of data or 'facts' have been created as these genres and positions always frame and limit what is said and how. The paper also suggests that researchers could try to guide the research subjects to adopt certain positions and to rely on certain genres in producing their diaries or video clips to obtain better-focused data for particular research or design purposes. On the other hand, challenges involved with this kind of an attempt are also highlighted.

**Author Keywords**

Video diary, children, multimodality, discourse, nexus analysis

# 1 INTRODUCTION

Information and communication technologies (ICT) play a pertinent role in our everyday life as our daily activities are increasingly technology-mediated or supported. In other words, we are living in a technology-rich world. Children are a growing group of ICT users and ICT is present in their lives in many different ways. In order to gain a better understanding of children's needs as ICT users, research methods suitable for children have been devised within Human Computer Interaction (HCI) research. We have experimented with video diaries[1] as a method for data gathering with children.

Video diaries as such have seldom been used in the field of HCI research but the 'diary method' has been discussed relatively frequently as useful both for HCI research and design purposes (see e.g., Carter et al., 2010; Carter and Mankoff, 2005; Carter et al., 2007; Czerwinski et al., 2004; Eldridge et al., 1992; Intille et al., 2002; Lichtner et al., 2009; O'Hara et al., 2006; O'Hara et al., 2007; Sohn et al., 2008; Rieman, 1993), even in connection with children (Labrune and Mackay, 2005; Markopoulos et al., 2008; Riekhoff and Markopoulos, 2008; Robertson and Nicholson, 2007; Tucker, 2004). On the other hand, one can find papers explicitly discussing the use of video diaries for research purposes with children in the fields of Education, Sociology, Health Research, Child Research, and Discourse Studies (e.g., Buchwald et al., 2009; Noyes, 2004; Quadri et al., 2007), which see video diaries not just as techniques for collecting data but rather as tools for participants' experiences, feelings and identity work, and worth study as such. Video diaries have been used in caring and health research, for example, providing children with an opportunity to express their experiences and feelings through a longer timespan (one month) in various life situations (Buchwald et al., 2009). Through video diaries, young men with muscular dystrophy have also been able to do identity work to present a particular kind of self (Gibson, 2005). In the field of education, Noyes (2004) has applied a video diary technique to map the socio-cultural landscape of primary-school children's learning dispositions prior to their transfer to secondary school. In that study, the video diary provided alternative perspectives to the inter-relatedness of school, family and peer group that the researcher had not anticipated. In other words, video diaries have not only been seen as a means for acquiring information but, rather, as analyzable events in their own right (Gibson, 2005). There is also an extensive body of research available on creative media production with (school) children involving video making (e.g., Buckingham et al., 2005; Chan, 2006; Potter, 2005; Sefton-Green, 2006; Winnie, 2010). These studies suggest that video productions by young people allow them to represent themselves and to explore their identities in an intuitive and natural way, relying on the forms and conventions of popular culture but also under the influence of certain institutional conditions (e.g., Chan, 2006; Potter, 2005; Sefton-Green, 2006). The studies also emphasize the constructed nature of video diaries, where the researcher or observer is always 'present' in these creations or performances, particular audiences are involved, the creators have adopted certain

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[1] The notion of 'video diary' is used in this article according to Buchwald et al. (2009) and Noyes (2004): "A video diary is a digitized diary used for research with purposes similar to those of studies using written diaries; that is, the collection of data on informants' lives over an extended period. [--]. During this period the informants conduct a daily camera session in which they share information with the researcher concerning their feelings, reflections, and other matters relating to the day and its events. Technically, time and date of shooting are visible for the researcher. If the child regrets a shot, it is possible to rerecord without showing the researcher, and if the child regrets participating in the project, it is possible to delete the whole shooting." (Buchwald et al., 2009: 13)

subject positions, and there is identity work going on (e.g., Gibson, 2005; Pini, 2001). This paper is strongly inspired by these viewpoints from which the existing HCI research has not yet examined video or diary data. Nevertheless, we claim that HCI researchers and designers, when analyzing their data, should acknowledge that similar issues may be affecting the outcome of their inquiry.

In ICT research more generally, some studies relying on the discourse perspective have already emphasized the constructed nature of the data gathered, e.g. as a performance addressing a particular audience, the performer adopting particular subject positions and performing certain kinds of identities. These studies have been carried out in various empirical settings (see e.g., Alvarez, 2001; Alvarez, 2002; Finken, 2003; Nielsen, 1999; Sarkkinen, 2004; Sarkkinen and Karsten, 2005), for example arguing that discourses in ICT development advocate the voice of managers and silence that of users (Finken, 2003; Nielsen, 1999; Sarkkinen, 2004; Sarkkinen and Karsten, 2005) as well as showing how identities are performed during requirements elicitation interviews (Alvarez, 2001 and 2002). The aspect of identity construction and exploration has been addressed also in other studies within ICT research, these studies arguing that designers' identities influence the design process and outcome (Kilker, 1999; Levina, 2005; McDonough, 1999) and designers create the conditions for users' identity performances (McDonough, 1999; Van House, 2011). It has also been pointed out that ICT use contributes to people's identities (Alvarez, 2008; Burnett and McKinley, 1998; Carroll et al., 2001; Van House, 2011) but ICT may also be modified by users to reflect their identities (Akah and Bardzell, 2010; Alvarez, 2008; Light, 2011, Oulasvirta and Blom, 2007). Some technologies have even been considered as identity technologies – used for expressing or even forcing identity (Light, 2011; Oulasvirta and Blom, 2007; Van House, 2011). Related to children, ICT may also have been designed to allow identity expression, exploration and construction that are seen as valuable for them (Bers et al., 2001; Bers and Cassell, 1998; Brynskov and Ludvigsen, 2006; Komlodi et al., 2007). These studies show the relevance of the discourse and identity lens within the ICT field, portraying discourses and identity work potentially shaping ICT design and its outcome as well as prospective ICT appropriation and use, and vice versa. However, no studies have considered such issues in the context of data gathering through video diaries with children. Still, in the video diary context identity performances may be taking place and potentially affect the outcome of data gathering. This is what this paper aims to examine. The research question examined in this article is: What kind of insights can a discourse lens provide for the analysis of video diaries produced by children?

The present study is part of a long-term multidisciplinary research effort, inquiring into people's technology-rich lives, where nexus analysis (Scollon and Scollon, 2004) is used as a theoretical and methodological framework for guiding the effort. One part of this effort has been to study children's technology use in their everyday practices. Connected with this, we have used video diaries produced by children as one means of data gathering. The perspective provided by nexus analysis led us to extending the data analysis from the actual observable situation to wider cycles of discourse on a long-term basis. We encountered some interesting phenomena in terms of research results and research methods not yet reported in the extant HCI literature on the topic. While videos and diaries in current HCI research are primarily used for gaining so called objective data on users, user experience, or usage habits (e.g., Carter and Mankoff, 2005; Czerwinski et al., 2004; Lichtner et al., 2009; Markopoulos et al., 2008; O'Hara et al., 2006; Sohn et al., 2008), we will, instead, extend the current understanding of video production and diary creating by research subjects, and discuss the ways to enrich their use in HCI research. The paper will reveal the wealth and versatility of the video

diary method and bring forth some notions on the multifacetedness of associated data collection and analysis. HCI researchers and designers using video creation or diaries for data gathering purposes can thus become more aware of the self-presentation and identity-construction going-on during such data gathering that naturally bear implications on the quality and nature of the received data. HCI researchers or designers may even try to guide this towards a certain direction although we emphasize the largely uncontrollable nature of this process.

The next section reviews related research on (video) diaries as a data gathering method and as a type of media used by people for capturing instances of their everyday life. The third section introduces the methodological background of this research effort. Thereafter, the results of our empirical analysis are outlined. The final sections summarize the results, discuss their implications and limitations and outline paths for future work.

## 2   RELATED RESEARCH

In the following, HCI research connected with (video) diaries will be reviewed, firstly, as regards adults and, secondly, as regards children. Thereafter, studies within other disciplines addressing video diaries produced by children will be discussed from a discourse perspective.

### 2.1   Diaries as a means of data gathering with adults

Video diaries as such have not been in focus in previous HCI research. The 'diary method', however, applying either diaries in traditional paper format or through some other media has been used both as a research method and as a requirements elicitation/evaluation method for design purposes (e.g., Carter et al., 2010; Carter and Mankoff, 2005; Carter et al., 2007; Czerwinski et al., 2004; Eldridge et al., 1992; Intille et al., 2002; Lichtner et al., 2009; O'Hara et al., 2006; O'Hara et al., 2007; Palen and Salzman, 2002; Sohn et al., 2008). Some studies have relied on diaries as research instruments, seeking a high standard of objectivity to achieve results as reliable as possible (e.g., Rieman, 1993). There are also HCI studies touching upon video recordings and diaries in the context of life-logging as well as recording experiences and memories (e.g., Lindström et al., 2006; Petrelli et al., 2009; Sellen et al., 2007). The focus of these studies has not been in obtaining data as objective as possible but, rather, in helping people to document aspects of their work (Katzeff and Ware, 2006) or their everyday life (Lehtimäki and Rajanti, 2008), possibly sharing the results with families, friends and colleagues. The diary type used in these studies also varies in relation to the data-collection method: the data may be collected automatically through (life) logging and recording methods (e.g., Eldridge et al., 1992; Kawamura et al., 2002) whereas in other cases more activating methods are used. Users may collect data *in situ* (e.g., O'Hara et al., 2006), using text messages or capturing video in certain situations, for example (e.g., Katzeff and Ware, 2006). Sometimes they may be asked to use paper diaries to record observations later (e.g., O'Hara et al., 2007), which is closer to the traditional diary writing practice (e.g., everyday diaries of 'ordinary people' or field diaries of researchers).

The diary method is argued to minimize the researcher's influence on data and to be less resource-consuming from the researcher's perspective than field studies. What is seen to remain problematic is the lack of researcher's control as well as the resource-demanding nature of the method from the research subjects' point of view (Carter and Mankoff, 2005). Encouraging sustained participation is

one concern for researchers doing diary studies. The researchers may choose a participant-directed approach that implies that the participants create the diary entries by themselves. An investigator-directed approach is also possible, the investigators somehow reminding the participants to create the entries by prompts such as text messages (Palen and Salzman, 2002). In the research design, the researchers may emphasize somewhat conflicting objectives: accurate recall on the one hand or reducing the laboriousness of use for the participants on the other (Carter and Mankoff, 2005). The participants may be asked to answer predefined questions for the purpose of strengthening accurate recall but such a practice may be burdensome for the participants (Carter and Mankoff, 2005). On the other hand, the participants may be allowed to capture only prompts for later discussion in interviews, which may hinder the recall but lessen the workload for the participants (Carter and Mankoff, 2005). To summarize, data accuracy and tediousness of data gathering seem to be the two important issues discussed by the researchers, one or the other being typically emphasized.

Many researchers have also argued for the diary method for gathering requirements or feedback in the design context (e.g., Czerwinski et al., 2004; Lichtner et al., 2009; O'Hara et al., 2006; Sohn et al., 2008). They justify the use of the diary method by arguments that are rather similar to those discussed in connection with the research context. Diary studies are argued to have ecological validity, providing *in situ* data in real environments (Czerwinski et al., 2004; Lichtner et al., 2009; Sohn, et al. 2008). It remains problematic, however, that the diaries may be tedious to produce for the participants (Czerwinski et al., 2004). There is also the possibility of missing data if people forget recording (Sohn et al., 2008). Again, the researchers have used mobile phone calls or text messages for capturing data as well as excel sheets, website entries and online forums (e.g., Lichtner et al., 2009; O'Hara et al., 2006; O'Hara et al., 2007; Sohn et al., 2008). The diary method seems to function well for reporting system use and usability problems as well as user experiences. Yet, it appears to be difficult to gain data on the broader picture concerning the setting and the context of use, for example (Lichtner et al., 2009). It is recommended that interviews be used to complement the diary method (Lichtner et al., 2009; O'Hara et al., 2006). Again, the researchers highlight the importance of gaining 'accurate facts' through the method.

In the context of life logging technologies, on the other hand, the goal is to allow people to capture data of maximal amount and variety with minimal effort. Nevertheless, the researchers also point out that it is naive to assume that the systems would capture experiences. Rather, what is captured is cues that may help the recall of experiences (Sellen et al., 2007). Furthermore, one should support active meaning building instead of passive capturing (Petrelli et al., 2009). Diaries would, thus, be used for recording personal experiences and inner thoughts, the diary acting as a resource for reflection (Lindström et al., 2006). Different kinds of solutions for people for logging their personal past and experiences have been created. The data captured may include physical and bodily aspects with bio and movement sensors (Lindström et al., 2006), text messages and photographs (Lindström et al., 2006), automatic location information and video without audio data (Eldridge et al., 1992) as well as data through wearable video camera combined with location data with the possibility for annotations, indexing and linking (Kawamura et al., 2002).

Only two of the articles reviewed above explicitly use the term 'video diary'. In both cases, a video diary system has been built to provide a memory aid, "a human memory prosthesis" (Eldridge et al., 1992; Kawamura et al., 2002). These two articles paint a relatively technical picture of video diaries, while other studies address diaries or videos in the context of life logging or experience capture,

highlighting the personal, creative, meaning-building and reflective aspects, more resembling traditional diary writing. Interestingly, only one of the reviewed articles discusses video recordings showing the participants themselves (Eldridge et al., 1992). Not even in that case do the participants talk to the video camera as in our study and in a wide range of research in other disciplines (e.g., Education, Sociology, Health Research, Child Research, Discourse studies, e.g., Buchwald et al., 2009; Gibson, 2005; Noyes, 2004). Still, in some of the HCI studies the participants have acted as active producers of data such as videos, pictures, text messages and voice mail calls (e.g., Carter et al., 2010; Carter et al., 2007; Katzeff and Ware, 2006; Lindström et al., 2006; O'Hara et al., 2006; Palen and Salzman, 2002; Petrelli et al., 2009; Sellen et al., 2007), while other studies (Dickie et al., 2004; Eldrigde, 1992; Kawamura et al., 2002; Petrelli et al., 2009; Sellen et al., 2007) have relied on automatic data capture, which is relatively far from the traditional method of diary keepers 'telling' their diaries about their experiences during the same day, i.e. capturing data actively.

## 2.2 Diaries used with children

HCI research focusing on children does not give markedly different results. First of all, some studies bring up the use of diaries as cultural probes. Labrune and Mackay (2005) test a tangible mobile camera ("Tangicam") with children for capturing and editing situated content and for creating complex narratives. They see Tangicam as an effective tool for researchers to use as a cultural or technological probe as it is easy to carry around. Interestingly, they are the only researchers in the HCI field that note that children could have some personal use for the camera as well, in the form of creating a diary – to film parts of their life and view and edit these film clips later on. The opportunity to use the diary as a cultural probe has also been observed by Riekhoff and Markopoulos (2008). They used it to gather information on the emotions and experiences of a four-year-old child in the context of sibling rivalry. The child kept a simple age-appropriate diary using stickers and took digital pictures with the help of his father. The diary was used as a method for gathering research data, in the same way as it has often been used in the case of adults.

Several studies in the HCI field advocate the participation of children as design partners. Few, however, utilise diary type of activities. These studies, again, use the (video) diary as a method for data collection for design purposes. Markopoulos and colleagues give advice for carrying out evaluations with the diary method (Markopoulos et al., 2008). They mention that diaries are usually in paper format but cameras as well as audio and video recording equipment can also be used. They also bring up that the diaries may be structured or unstructured, and, depending on the age of children, they may be filled in either by the children themselves or by their parents. Robertson and Nicholson (2007), in creating an interactive learning environment, used a design diary to investigate how young people's ideas evolve as they create their own computer games. At the end of a workshop day, the researchers interviewed children as they filled in a design diary. Tucker (2004) reports on a development project for children aged 10–13 for the purposes of encouraging self-documentation by child design partners on their own thoughts and ideas of technology design. The researchers had asked children to use traditional pen and paper diaries earlier but met with some resistance by the children as the low-tech methods resembled school assignments too closely and were, therefore, not considered fun to do. Thus, an online community photo journal with multimedia elements was created. The idea was to give the children an opportunity to draw and write by using the computer

and share their creations with other members of the team. They call their article as 'a diary of the future' but do not discuss the possibility of children using the diary for personal purposes. Duveskog et al. (2009) have collected life stories of Tanzanian children to use as a basis for a story-based educational tool for HIV and AIDS counselling. They note that true life stories were very important for the credibility of the tool as they gave the users a possibility to identify with and recognize their own environment in the stories.

Altogether, the use of 'video diaries' has not attracted researchers to a great extent in the HCI field. Based on the few articles referred to above, the same trend seems to emerge in child-related studies as in research concerning adults. The role of diary and real-life stories seems to be twofold: they are used either for providing design ideas or feedback when children work as design partners, or as research instruments, children providing research data of interest. In some cases children actively collect data *in situ* while in others data are collected retrospectively. None of the studies use video diaries in the traditional sense of diary keeping, children telling at the end of the day what they have been doing (e.g., by writing or by recording a video) for reflection and life logging purposes.

## 2.3    The discourse perspective

In addition to the research presented above, some viewpoints from discourse studies have been used as a resource in the present study. Those lead us to see, in line with Büscher (2005), how 'gathering data through video' should not be seen as a method for putting the observable phenomenon under microscope (with an aim to capture world as is), but rather as a means to understand human behaviour better, to observe dynamic, lived and changing practice, the data being viewed not as facts but as participants' perspectives (Chan, 2006; Gibson, 2005; Noyes, 2004; Pini, 2001; Potter, 2005; Sefton-Green, 2006). Thus, the data are to be treated not as mere products made available for research, but as windows to the dynamic activity of their production within specific, situated, contingent practices, documenting their social arrangements (Mondada, 2006).

The discourse perspective implies that diaries can be viewed as media for self-reflection and identity construction (see Chan, 2006; Moinian, 2006; Noyes, 2004; Potter, 2005; Pini, 2001; Sefton-Green, 2006). While creating their video diaries, children can be seen as reflecting on their attachment to social groups, cultures, and institutions through various subject positions such as "a good student" or "a (video) gamer" (Davies and Harré, 1999; Gee, 2005; Potter and Wetherell, 1987). Such construction emerges through a variety of 'cultural dances' in the choice of vocabulary, lexical repertoires as well as formulations of talk, modes and styles during key moments in interaction (Suoninen, 1999). The diary keepers are, in front of the webcam, involved in the process of positioning self in relation to the assumed (target) viewers. There is also an audience emerging, mediated through the camera even if the diary keeper may not be aware of this (Gibson, 2005; Pini, 2001). The webcam or the viewer, mediated by the webcam, might be treated as a conversation partner, a loyal friend or a counsellor (Buchwald et al., 2009; Moinian, 2006; Noyes, 2004). Similarly, the diary may be addressed to as a friend (Moinian, 2006). There may also be further, more implicit audiences traceable through discourse. Kress and Van Leeuwen (2001) use the term 'image act' to illustrate the process through which the position of the viewer is designed through the use of language but also through other semiotic resources available for meaning-making in a

particular situation. Norris (2004) builds on the same perspective, developing her framework for analysing multimodal interaction.

Even if the video diaries are produced in a home environment, the diary-makers display connections to their other life spheres more extensively. In the video data, the participants constitute the boundaries between school and home through their orientation to relevant institutional roles and identities and the particular responsibilities and duties associated with those roles (Drew and Sorjonen, 1997). The video diaries also reveal some of the cultural conventions behind the subjects in question. Our analysis draws upon the notion of genre, which is here seen as social distinctions that are dynamic, fluid, heterogeneous and situated as well as embodied in our actions (Bazerman, 1997; Bazerman and Prior, 2005). Genre and situation are also mutually constructive (Devitt, 1993). This perspective can be characterized as a practice approach (Bazerman and Prior, 2005), a situated approach (Erickson, 1997), or an activity-based view (Bazerman, Little and Chavkin, 2003), which all trace back to Miller (1984), who suggests genres to be "typified rhetorical actions carried out in response to socially defined, recurrent situations" (see also Russell, 1997). Kress (2003: 103) defines genres as "shaping of text which reflects and is brought into existence as a result of the social relations of the participants in the making (writing/speaking) and in the use (reading/ hearing/ interpreting) of a text". It has been observed that children acquire understanding of such genres and their features at a very young age through play. Children as young as 4.5–5 years old may distinguish between forms of discourse (e.g., narratives) and draw upon intonation resources appropriately (Wade and Moore, 1986). Older children (e.g., 11 to 15 years old) even seem to be familiar with relevant cultural phenomena such as the Big Brother confession room that bear clear implications on the appropriate ways for children for creating their video diaries (Buchwald et al., 2009; Noyes, 2004; Potter, 2005; Sefton-Green, 2006; Winnie, 2010).

## 3    RESEARCH METHOD AND PROCEDURE

In the following, nexus analysis as our research framework is presented and the procedures of data gathering and analysis are described.

### 3.1    Nexus analysis as a research framework

As was discussed above, the present study is not a typical video diary study within the HCI field aiming at capturing so called 'objective facts'. Rather, it takes the video diary data under closer scrutiny and utilizes a discourse perspective as a lens for the analysis, thus focusing more on what the data will tell the researchers about the video diary method itself, the social action in question, the participants and the technologies involved, not only *in situ* as such but also across multiple timescales. For this purpose, we particularly rely on nexus analysis, a methodological framework and research strategy, which is concerned with the mapping of semiotic cycles of people, discourses, places and mediational means involved in the (mediated) social actions we are studying (Scollon, 2001; Scollon and Scollon, 2004: 14). The emphasis is on the whole social action, mediated by a broad multimodal range of cultural tools or mediational means – including language (Scollon, 2001). One of the central tasks is to examine how "the broad discourses of our social life are engaged (or not) in the moment-by-moment social actions of social actors in real time activity" (Scollon, 2001: 139). Nexus analysis thus provides a historically-bound research strategy (Scollon and Scollon,

2004), allowing us to extend the perspective from the actual here-and-now situation to wider cycles of discourse on a long-term basis.

Nexus analysis entails, as Scollon and Scollon (2004) suggest, viewing social action as a cross-section of three aspects: **historical body** (Nishida, 1958), **interaction order** (Goffman, 1971) and **discourses in place** (Scollon and Scollon, 2003). Historical body refers to our experiences, histories and everyday practices. For example, today's children are acculturated into the use of various media and technologies from an early age while their teachers may be living in a different kind of media world (Kress, 2003). Interaction order implies any of the possible arrangements by which we form relationships in social interaction (Scollon and Scollon, 2004). For example, classroom dynamics may depend on who is present and who is not. Finally, all social action with the intersecting discourses is situated in real time and place, the participants drawing upon available resources for meaning making. The crucial aspect is to look at what is being done in the social action in focus and how the dimensions of historical body, interaction order, and discourses in place can be seen to intersect in this action. For this reason, nexus analysis requires a variety of methods for data collection and analysis. Furthermore, nexus analysis not only provides the theoretical frames of reference on how to perceive the social action at hand but it also provides a general strategy for research that guides the researcher in seeking answers to the research questions through three cycles, i.e. **engaging**, **navigating** and **changing** the nexus of practice. In other words, the researcher first seeks to become engaged with the community being researched, then delving deeper or navigating for answers through different kinds of methods and data. Throughout this process he or she participates in the practices of the community being examined, thus contributing to its change (Scollon and Scollon, 2004).

This study is part of a larger research effort that aims at changing the nexus of practice in relation to children's participation in their technology-rich environment. In the initial phases, to become engaged with the community to be studied, the research group organized participatory design projects in several settings, e.g., children designing their own digital portfolios in a local school and local citizens (children and their parents) drafting the technological infrastructure for a new multipurpose community centre. The material examined in this paper comes from one of the partner schools, in which different kinds of data on children's technology-rich everyday life was gathered. The study provides a delineated perspective within an extensive, long-term research project into one particular situation of data collection through video diaries. Thus, this study concerns the navigating phase of our multidisciplinary research effort inquiring into children's technology-rich everyday life through different methods and data.

## 3.2   Case description and the procedure of data gathering

The data for this study originates from a research project organized in cooperation with a local school (7–12-year-old children) in Finland where Master's-level university students were gathering data on children's technology use in their everyday life as well as experimenting with participatory design with children. A meeting was organized in the school and two participating classes for the research settled (9–11-year-olds). The classes were chosen as they had already been taking part in a project looking for new pedagogic solutions involving technology use and the teachers were ready to engage in further experimentation. The research activities were part of children's schoolwork.

Related to inquiring children's technology use, the research project relied on multiple methods for data gathering, i.e. questionnaires, interviews, wall-charts, paper diaries, and video diaries. The data collection methods were planned drawing inspiration from previous research with children (e.g., Druin and Solomon, 1996; Jensen and Skov, 2005). The multidisciplinary research group involved in this research effort commented on all the data collection procedures before they were implemented at school with the children. The study focuses on the data gathered from one of the classes, the children aged 10 or 11 years. All these pupils had received for their personal, everyday use laptops from the school almost one year earlier and were therefore at this point of time already accustomed to their use at school and at home (unlike the other class). As the laptops had webcams, the video diary method (in the sense of Buchwald et al., 2009; Noyes, 2004 and Quadri et al., 2007 among others) was selected as one method for inquiring into the technological devices and applications that these children were using on a daily basis. This article focuses on the findings from the video diary data.

The children were asked to describe their daily activities related to technology use at the end of four subsequent days, which was considered appropriate in terms of workload for this age-group as the tediousness of this method has worried researchers even in connection with adult research subjects (see e.g., Carter and Mankoff, 2005, Czerwinski et al., 2004, Palen and Salzman, 2002). Descriptions of daily activities were to be recorded as video clips using the laptop webcams. Some themes and questions were given as guidelines. Researchers' predefined themes or questions to be addressed in the diary entries have been previously used in other video diary studies (Noyes, 2004; Quadri et al., 2007) as well as in HCI diary studies (e.g., Lichtner et al., 2009; Markopoulos et al., 2008; O'Hara et al., 2006; O'Hara et al., 2007; Sohn et al., 2008) where the research subjects have been asked to adopt a particular point of view, rather than tell about their everyday experiences on a general level. Thus, the video diary method used in the present study resembles the diary method familiar within HCI research, even if with certain differences (see also section 2).

The detailed task assignment for the children was as follows: *Tell your computer webcam freely about the following topics: What devices did you use today? For how long? What did you do with them? With whom? How did you feel? (Tell and show with your face)*. These questions were designed to initiate reflection in the children related to their technology use. The social and affective aspects were additional interesting viewpoints included. In addition, there was a daily question on the Internet for the children to answer each day (Morrow, 2001; Quadri et al., 2007 among others have used a similar technique). These questions were designed to inquire more specific issues relating to children's Internet and mobile phone use as well as to their preferences. The daily questions were presented through a blog called *The Troll's Diary* (the Troll was a friendly character introduced to the children during the research project, given a face and a name, referred to during other research activities mentioned above as well). The children were instructed to go to the blog website to view a separate question for each day. The questions were the following: *1) Which is your favourite Internet site? Tell about it. 2) When do you search for information on the Internet? Can you trust all sites? How do you know which ones to trust, which ones not? 3) What is your favourite technological device? Tell about it. 4) Do you use your mobile phone for something else than sending/receiving text messages and making/receiving calls? For what?*

The instructions for the video diary study were given to the children during a school day by the researchers. The researchers presented themselves and their research project to the children. The researchers assumed that some extra measures are needed for making the task assignment

understandable for the children. Especially of help here was one of the researchers who had previously worked as a teacher. The researchers played a technology related game with the children and practiced identifying technological devices with them before giving them the detailed instructions. After that the children practiced webcam use with their teacher to ensure they were able to use it. Although laptops had been in children's use for long, it was not certain that they had used the webcam. After four days, the children delivered their video diaries on the hard drives of their laptops to the researchers for storage and analysis.

Altogether 12 boys and 11 girls produced the video diaries. The number of video clips varied a lot: only 1 boy but 6 girls had produced a video diary clip on all the four days. 6 boys and 4 girls produced clips of three days, 2 boys of two days and 3 boys and one girl only of one day. This finding resonates well with the existing research describing the problems relating to the lack of the researcher's control as well as to the resource-demanding nature of the method from the research subjects' point of view (Carter and Mankoff, 2005); even with adult research subjects methods for encouraging sustained participation have been devised (Palen and Salzman, 2002). In our research effort, the research material consists of a total of 92 individual video diary files produced by 23 children. Some of the children produced separate files for answering the daily questions, and some had even made numerous clips on the same day, apparently trying to improve the original presentation of that day. The girls produced 52 files while the boys created 40 files. The girls also produced somewhat longer video clips, the average length of the girls' files being around 52 seconds while that of the boys' only 38 seconds. In addition to the video clips, the research data includes all the documentation produced by the research team connected with the video diary method use (including the documentation on planning, implementation and data analysis).

### 3.3   The process of data analysis

Our data analysis consisted of four phases described below. In the first phase, our multidisciplinary research group viewed the material and made some general observations. Here, the aim was to examine what seemed to arise from the data and produce an initial content analysis of what the children were reporting. The first viewing showed that most of the children seemed to use the same type of devices and applications and their daily routines resembled those of their peers. It seemed, furthermore, that the children had not always read the assignment carefully or understood it correctly as their answers were often either incomplete or off topic. In addition to the information on the devices used, the children had also been asked to indicate the duration of use, possible companions and feelings during the use. However, there was considerable variety in children's diary entries in relation to these issues. Some children gave very detailed answers while others produced incomplete accounts. In some cases, no answers to the questions had been given at all. Altogether, it seemed that the video diaries revealed long lists of technological devices and applications the children use. They had also given some hints on the duration of the device and application use, associated feelings and potential companions. On the surface, the content of the diaries produced did not seem to provide very abundant or detailed data as insights into the everyday technology use of the participating children. There may be various reasons for why the results were scarce at this point. The research design, the instructions given and the questions asked may have been unclear to some of the children. Children may have had difficulties in concentrating and their motivation may have been low. These

aspects may bring issues of trustworthiness to be considered by researchers (Markopoulos and Bekker, 2003). Nevertheless, we did not see these problems only as a limitation of the data gathering method or procedure but a question of analysis perspective. Therefore, in the next phase of the analysis, the scope of analysis was broadened.

In the second phase of analysis, inspired by the framework of nexus analysis, the research team organized data analysis sessions in which researchers with varying backgrounds in discourse studies and/or in HCI research co-viewed the video material several times and made together notes on the potential insights the video material might bring. During these sessions we started to see the new richness in the content. It was, however, evident that the data had to be prepared for more detailed analysis. This was decided to be carried out as individual work before the next joint analysis session.

In the third phase, therefore, the video diaries were examined in more detail each by two researchers. The analysts were to produce transcripts of the files, paying attention to the multimodal aspects of the data. In other words, the transcript displayed beside the speech also facial expressions, movement, gestures, posture, gaze, material objects used, possible companions, and all the aspects of the surroundings that was seen in the clip (Norris, 2004; see also Buchwald et al., 2009; Noyes, 2004).

In the fourth and final phase of our analysis, after the individual work, the researchers gathered together to share their notes and transcripts. The basic nexus analytic (Scollon, 2001; Scollon and Scollon, 2004) concepts (historical body, interaction order and discourses in place) describing the aspects of social action served as sensitizing devices for the co-analysis. During the co-analysis sessions, a shared analytical framework inductively emerged. Findings related to each child and each video clip were collected into a table, in which the columns, after an iterative and collaborative process of data analysis, ended up as describing the participants traceable from each clip and the genres invoked in each clip. The participants traceable from each clip included the speaker as well as all the potential hearers, i.e. the assumed or actual audiences. All in all, the pertinent findings of the study were connected with 1) the different subject positions that the children enacted in relation to different kinds of audiences during the production of the video clips, and 2) the variety of genres that the children invoked. As for the subject positions, they reflected different configurations of interaction order between the participants, either present during the production or spatio-temporally more distant (e.g., the teacher). The genres drawn upon, on the other hand, could be seen to arise from the historical body of the children in terms of their (multimodal) literacy awareness. The focus on discourses in place, i.e. on specific, situated, multimodal performances in front of the webcam, finally, made us to pay attention not only to language use but also to multimodal means of meaning making such as facial expressions, gaze, gestures and movement (Norris, 2004), all indicating how the children as producers of the video clips were positioning themselves in relation to the task and all the possible audiences (Norris, 2004). The framework of nexus analysis, thus, enabled us to inquire in detail the multimodal 'discourses in place', i.e. those captured in the video clips, situated in real time and place. Moreover, the framework forced us to view beyond those discourses and to acknowledge the dynamic aspects of historical body and interaction order, i.e. how the participating children necessarily and continuously relied and drew on their experiences, histories and everyday practices as part of numerous and varying kinds of social groups, arrangements, cultures and institutions, familiar with a variety of cultural forms, conventions and conditions. All in all, a

multitude of different kinds of audiences, performers and performances were inductively identified from the video diaries that had all been initiated with one single assignment.

## 3.4    Ethical issues

Ethical guidelines (e.g. Mackay, 1995) were emphasized in all phases of the current study. First of all, the parents were asked for informed consent for their children to take part in the study. In addition, privacy issues were considered. People may provide very private data when creating their diaries. Children have different roles and lives at home and at school and especially older children may be reluctant to mix these domains, or to share too much information even though the trend is to bridge the information gap between home and school (e.g., Fraser et al., 2006). In the case of a diary, children may not want their family members (e.g., parents) to be able to access the diary even though they know that researchers or teachers will see it (Buchwald, 2009). Therefore, it is important to create conditions in which children can record their diaries in privacy. In our study, the children were asked to produce the video diaries at home so that the restless school environment would not affect the recording or cause distractions from regular schoolwork. Most of the children seemed to create their diaries in the privacy of their own rooms. This also gave the researchers an opportunity to have a peek into the home context. Even though we did not stress privacy issues for children's parents, we treated the data with respect towards the privacy of children as well as their families as a whole. To protect their privacy, the actual video diaries were deleted after our data analysis and only voice track and transcriptions of the diaries were saved for possible later use.

## 4    EMPIRICAL RESULTS

This section offers a discussion on the subject positions and invoked genres as identified during the analysis as well as their empirical illustrations.

### 4.1    Introducing the subject positions adopted and the genres invoked by the video diarists

It was possible to identify seven major subject positions which the children seemed to draw upon while producing their video diaries. These were the **news anchor**, **stage performer**, **storyteller, diarist** and **pupil** as well as **child** and **peer**. These positions that were inductively identified from the data were intertwining in various ways in the course of the interaction. Many children adopted more than one during one video clip, sometimes even simultaneously (see Figure 1).
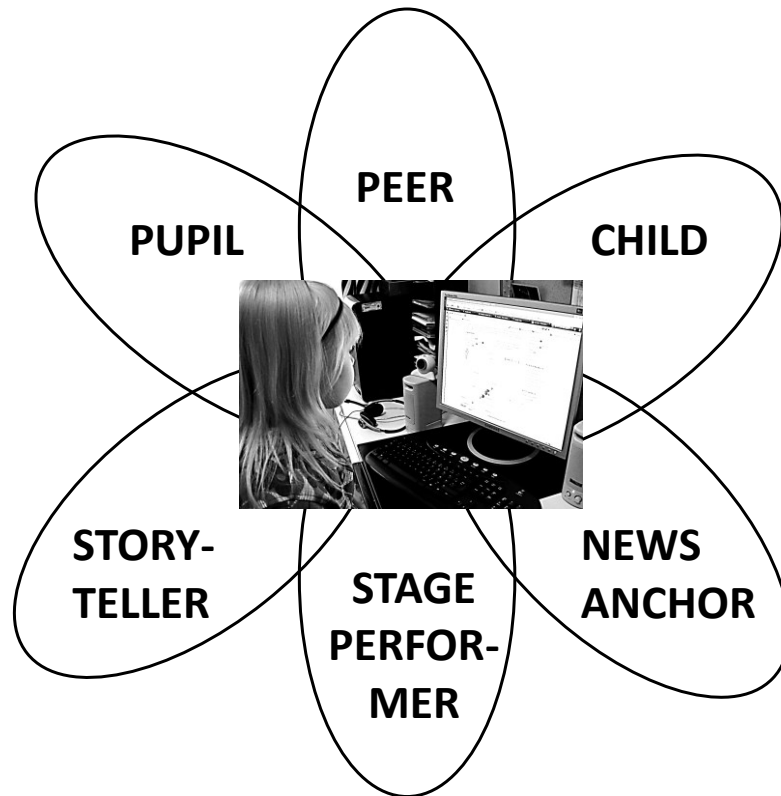
Figure 1. Children switching between different subject positions when producing their video diaries.

Some of the subject positions were more unordinary positions to be taken by these children, adopted for the task in association with a certain widely known media genre (e.g., news anchor), others more general and mundane positions associated with the literary tradition (e.g., storyteller), while some were very broad and natural, everyday subject positions in the lives of these children (e.g., child or peer).

In addition to the variety of subject positions the children adopted, we also identified some well-known genres inspiring the creation of the video diaries. Practices associated with these genres may guide the children towards the use of different multimodalities, i.e. language, bodily posture and objects, as appropriate to the situation in question. Children may even be able to adhere to such genres on a structural level if they do not yet master their vocabularies well (e.g., through typical openings and closings) or by using other multimodal means such as body posture, gaze or intonation. The children in this study were as old as 10–11 and clearly capable of utilizing a range of (historically and culturally formed) resources to invoke certain genres in their video diary production. Examples from the data include producing **a news broadcast**, **a diary**, **a stage performance**, **a narrative** and doing **school homework.** These genres had their parallels in the positions introduced above. Therefore, the genres identified naturally followed from the specific subject position (i.e. stage performer producing a stage performance). However, there are two subject positions with no obvious genre associated with (the peer and the child). These positions entered the scene without the overall orientation to the specific task at hand, to produce the video diary, but instead their adoption rather interrupted or reoriented the creation of the video diary. The positions were identifiable and had clear implications on the video clips produced but with no specific genre related to the creation of a video diary. However, as school homework is part of children's everyday

life in the home environment, the positions of the child and peer could be connected with the school homework genre in general, reflecting the interactions between family members and friends at home in terms of doing school homework (not creation of the video diary as such).

All in all, the children created the video diary clips relying on their more or less close familiarity with the conventions and structure related to the genres identified in this study and positioned themselves in particular subject positions, even if potentially continuously changing, and produced the video diaries for a particular audience. Next, we will go through the subject positions and genres in more detail.

## 4.2 Empirical illustrations

The various subject positions and associated genres invoked by the children are illustrated in Table 1 through some exemplary references to the data.

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**News anchor producing a news broadcast** (Boys 1, 5 and 8–9; Girl 1)

- formal, standard language with clear articulation
- peaceful pace of talk
- factual details and examples
- body posture: sitting straight, gaze directed to the webcam
- if notes are used, they are glanced at hastily, keeping the posture focused on the camera
- addressing an unspecified audience

**Stage performer producing a stage performance** (Boys 2, 6 and 10; Girl 1)

- dramatic openings and closings
- dramatic effects through intonation, gestures and gaze (e.g., finger-pointing and widening the eyes as if involving the hearers), head movement to and fro,
- joking or adding humorous asides (e.g., by facial expression, voice tone, gesture, digital effects)

**Storyteller producing a narrative** (Boys 5 and 9–10; Girls 1 and 7–8)

- narrative performance structure
- metadiscoursal elements pointing out the sequence of events (e.g., temporal adverbs)
- expressive intonation typical for storytelling
- marked openings and closings (e.g., "The end.")

**Pupil (doing homework)** (Boys 1–8 and 11–12; Girls 2–7 and 9–11)

- neutral, relaxed reporting to the camera without signs of performing any particular role
- tasks completed efficiently without anything additional
- recording several versions of videos to achieve a pleasing result

**Diarist producing a diary entry** (Boy 5; Girls 3, 5 and 7–8)

- intimacy created through language and topic choice, proximity with the camera
- talk wandering off-topic, a stream-of-consciousness technique

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> - sharing personal experiences and memorable events during the school week
>
> **Child (doing homework)** (Boy 4; Girl 5*)
>
> - answering the mother's comments
>
> - parents seen or heard in the background
>
> **Peers (doing homework)** (Boys 2, 6* and 10*; Girls 1*, 11** and 12**)
>
> - making fun of the situation
>
> - performing to some other child present
>
>
> \* A companion present but not seen or heard on the video
> \*\* The children seem to have collaborated in creating their clips of the day.

**Table 1.** Subject positions and genres identified with empirical examples


First of all, the voice of a **news anchor** became prevalent in times in some children's (e.g., Boys 1, 5, 8, 9; Girl 1) video diaries that can be argued to draw upon the factual **news broadcast** genre during these occasions. The subject position of the news anchor could be identified, for example, through the speakers' switch from informal, casual talk to more formal, standard language with clear articulation, elaborating the diary with factual details, numbers and examples. Such a stance was sometimes strengthened by the speakers' body posture: children were sitting straight, gaze directed to the webcam. If notes were used, they were glanced at hastily, keeping the posture focused to the camera. Boys 1, 8 and 9 and Girl 1, for example, gave detailed information on their technology-use in their reports, attempting to speak formally, giving grounding for their choices, and talking at a peaceful pace:

*"My favourite device is the computer because it is a very useful device. One can search for information with it. Then, it is also a good device for entertainment. One can play on it on the Internet, listen to music."* (Boy 1)

Similarly, Girl 1 used formal expression, including full sentences, building the report from beginning to end as a whole, looking aside in times, reading her own notes:

*"Today I used the computer. […] In the evening I created in Microsoft Office Word something called the Dog Book. […] The daily question is: When do you search for information on the Internet? Can you trust all sites? How do you know you can trust something? Well, for example, one can't trust the Habbo Hotel site. Sometimes viruses come from there and it is pretty bad, because one can't be protected from it, in any way."* (Girl 1)

Boy 9 did not seem to rely on his notes at all as he kept his gaze tightly directed to the camera throughout the entire diary entry. He seemed to direct his talk to an audience, which he saluted waving his hand at the end of the recording:

*"Hello, I am [firstname lastname] and now I am going to tell you what electronic devices I used today. In my home, I used the computer for about thirty minutes and I was also in the library today where I was on the Internet for about thirty minutes. I also used the microwave oven today and I used it for thirty seconds."* (Boy 9)

As for a potential group of hearers, this child seemed to direct his talk to an unknown audience as he presented himself with a full name. In other words, the purpose of the diary-production did not seem to be at least solely a school task for him as the scope of the potential hearers seemed to extend beyond the classroom community. In Boy 5's diary entry the background for the situation was also given:

*"I am making a video diary because we had visitors in our school and they gave it to us as an assignment."* (Boy 5)

Also here, the researchers and the teacher were excluded from the assumed audience as they would have been aware of the nature of the task. A similar kind of structure was found in Girl 8's video among others.

Another subject position emerging from the data was labelled as **storyteller**, which was related to the **narrative** genre. Storytelling is characterized by expressive intonation and marked openings and closings. For example, Boy 5 finished his story with the expression *"The end"*. Girl 8, in addition to clearly marking the start and the end of her recordings, told about her daily activities in connection with technology use. The fairy-tale-type setting was strengthened by expressive intonation and facial expressions, e.g., Boy 10 leaning towards the webcam and lengthening the vowel in *school*. The metadiscoursal elements in the diary entry pointing out the sequence of events also suggested that the child was telling a story. This was visible, for example, in the use of temporal adverbs such as *now* and *then* as in *"And **now** [stresses the word] I am going to tell ..."* (Boy 9) and in repeated sequences such as *"Yeees and then…"* (Boy 10, enthusiastic intonation).

In some of the diary entries the children seemed to direct their talk to their target audience taking the position of a kind of **stage performer**. Girl 1, for example, even though she in times approximated the voice of a news reporter (see above), occasionally positioned herself as giving a performance, starting the diary entry dramatically with an opening that could be lines from a school play dialogue and closed the diary entry with a gesture pointing at the audience and a salute: *"Well, well [a sigh of a relief] it is Wednesday now! Fortunately! [...] I wish you have a similar kind of day some day! Cheers!"* (Girl 1). Means for creating dramatic effects included intonation, head movements to and fro as well as gestures and gaze (e.g., finger-pointing and widening of eyes as if creating high involvement with the hearers). While giving the diary entry Girl 1 also gestured to someone out of the picture frame demanding silence. In other words, the framework of potential viewers of the video diary may have involved also local participants in addition to those receiving the recording. This performer's presentation brought forth the genre of an entertaining **stage performance** as did the diary entries of some other pupils (see below).

In some cases, the child seemed to be searching for an appropriate approach for giving the diary entry, starting perhaps with a more serious, school assignment type of account but switching in times into playful performance or 'entertainment' (e.g., Boys 6, 10). Boy 6, for example, after neutrally describing his daily activities, suddenly started lolling his tongue out of his mouth, waving his hand and changing his voice into a more childlike tone. It is unknown whether additional audience had appeared in the room. Boy 10 had added different kinds of digital effects into his video clips, such as a UFO flying around the screen or a lightning cutting across the screen. Such fun-making or entertaining additions may have been triggered in these situations by the presence of peers or difficulty in finding a pleasing presentation of self, perhaps even trying out different alternative

'selves' privately to the camera, at the same time aiming at an entertaining **stage performance** type of result**.**

As above, it seemed that some video diarists were in trouble trying to find a suitable manner to fulfil the task, squirming on the chair and making fun of the situation. This might be due to uncertainty concerning the assumed audience(s) such as the teacher, the research group and the peers. In fact, the subject position of the **peer** may occasionally have become prominent in the use of humour, or making fun of the assignment not only because of classmates or friends as potential viewers but also because some may have been actually present in the recording situation. The occasional tensions between the subject positions of the **child** and **peer** in the video diary recording situations were in some cases intensive in that various pressures were directed to the child by others present (e.g., family members). For example, Boy 4 exchanged numerous turns with his mother from the background as in the following example.

*"What do I say mom? I don't dare to say the word I'm supposed to. [Whispering:] I should say [...]"* (Boy 4)

The mother offered suggestions for answers some of which Boy 4 rejected trying to resist being placed in the **child** position (obeying Mother), trying to keep the focus on his own (obedient) **pupil** position and orientation to the given task at hand, as a school assignment. Another discussion between mother and son occurred in a different video clip:

Boy 4 to the camera: *"Today, I played on the computer with John and Sam."* Mother from the background: *"You can't have played with Sam."* Boy 4 to Mother: *"Shut up now!!! Look, now, it's ruined because of you!!!"*

The mother's intervention seemed to pull the child towards the subject position of the **child**, which he resisted strongly giving an elaborate 'answer' to the school assignment in the end despite the disturbance, following the school **homework** genre for the task at hand. The position of the **child** can be implicitly inducted from some of the diaries in similar types of situations where parents can be seen in the background of the video or voices of other family members can be heard.

Most of the time, however, the children seemed to stick to the position of the **pupil**, which entailed talk and behaviour that seemed to be neutral, relaxed reporting the task at hand to the camera, without particular signs of performing any particular role. Tasks were completed efficiently, without anything additional. Some children seemed to be more ambitious than others. Girl 5, for example, had recorded her videos again to achieve a result that she was pleased with. The repetition seemed to focus rather on elaborating the contents than the presentation itself. The overall feel of the presentation (relaxedness, positive atmosphere, easy relationship with the camera and the audience with salutations) suggests that the girl had intrinsic motivation to accomplish the assignment as an obedient pupil. On the other hand, some children had produced only very few video clips or concentrated on producing funny clips, neglecting the original assignment. Those children could be argued of having adopted the position of a pupil as well but their interpretation of the task seemed to allow the genre of an entertaining **stage performance** rather than that of more neutral **school homework** in general.

Finally, the subject position of the **diarist** became visible in some of the diary entries. Boy 5, for example, let his talk wander to other topics than directed in the assignment through a kind of stream-

of-consciousness technique. He told the camera about his personal experiences and memorable events during the school week:

*"Today, Jon visited us and we made water balloons. I got a little bit wet. And there was a visitor at school; he had made some videos with some pupils."* (Boy 5)

Some girls embedded in their narratives on technology use even some personal disclosures (e.g., their feelings concerning some events at school or at home):

*"Cheers diary! [...] I used the digital piano with my friend, because I wanted to learn to play the piano better. I tried to play [a song], but wasn't able to and actually I still can't [...] Afterwards, I felt desperate because I wasn't able to play the song. I used the mobile phone alone, when I called a friend to ask if she could play with me. But she couldn't play with me, because her family was going to visit some acquaintances. I felt lonely then because nobody was able to play with me. But suddenly my friend called me back and said that she would not go [with her family], I was very excited and went to visit my friend. That's what good friends are like!"* (Girl 7)

At the beginning of Girl 7's diary, there is also a traditional greeting to the diary, typical to the confessional, intimate **diary** genre. Similar type of characteristics can be found in Girl 8's diary as well: *"Hello again, dear video diary! It is now Tuesday 14$^{th}$ of October."* (Girl 8).

### 4.3    Relationship between subject position and genres

Based on the data, it is possible to tentatively classify the seven subject position/genre pairs identified according to a two dimensional categorization based on two qualitative characterizations of the social arrangements and cultural conventions these positions and genres reflect (see Table 2).

**Table 2.** Subject positions in the data in relation to genre constraints and distance to audience.

|  |  | Genre constraints | | |
| --- | --- | --- | --- | --- |
|  |  | **HIGH** | **MEDIUM** | **LOW** |
| **Distance to audience** | **HIGH** | News anchor | Stage performer | Storyteller |
|  | **MEDIUM** |  | Pupil | Peer |
|  | **LOW** |  | Diarist | Child |

The children as performers of their video clips were constantly constructing their identity by adopting specific, situated and contingent, subject positions while representing themselves for their assumed (or in some cases even present) audience. Concerning this aspect, there is variety concerning *distance to audience* (low, medium, high) in these positions between the child performer and the assumed audience. Distance to audience is low between family members and when the child actually has someone to perform to present in the situation, medium between friends and other people known to the child and when the performance is oriented towards them, while it is high between people unknown to the child and when the performance is not oriented towards anyone particularly.

In addition, *genre constraints* vary as well (low, medium, high) reflecting the historically and culturally institutionalized conventions the children associate with the genres they invoke. Genre constraints are low when there are almost no rules and conventions the child is expected to follow when performing, medium when some cultural manners and habits can be associated with the genre while performing (e.g., answering a question as a school assignment), while the genre constraints are high when there are institutionalized cultural conventions known to everyone, naturally following when performing according to the genre adopted. In Table 2 the seven subject positions identified in this study have been categorized according to these two linear characterizations.

## 5   DISCUSSION

This paper inquired what kind of insights a discourse lens can provide for the analysis of video diaries produced by children. In the following, the main results are summarized after which their implications are discussed from the viewpoint of HCI research and practice. First, the implications of the results are discussed from the viewpoint of HCI research and practice utilizing diaries or video productions created by research subjects. Afterwards, the results are considered from the viewpoint of participatory research or design with children. Finally, some insights relating to the use of nexus analysis as a research framework are discussed.

### 5.1   Summary of the results

Based on our empirical analysis we identified seven subject positions within which the children produced their video diaries and five genres that the children invoked during the production. The children positioned themselves in times, sometimes momentarily, as news anchors, stage performers, diarists, pupils, children and peers, delivering, among others, factual news broadcasts, confessional, intimate diary entries, entertaining stage performances or school homework assignments through their video diaries. On one hand, these performances varied reflecting the social arrangements between the child as the performer and the assumed audience (*distance to audience*). On the other hand, some genres drawn upon guided and bound the performer more than others (*genre constraints*). The children also smoothly switched between different positions drawing upon related genres, sometimes constantly changing the position even during one video clip. Our results have similarities with the studies representing the discourse perspective, within which it has been shown that the webcam or the diary may be treated as a conversation partner, a friend or a counsellor (Buchwald et al., 2009; Moinian, 2006; Noyes, 2004). Our results, in line with other studies (Buchwald et al. 2009; Keating 2005; Noyes 2004; Winnie 2010), show that the children were familiar with numerous genres suitable for these productions having grown in a media- and technology-rich environment, where videos, Big Brother confession rooms and laptops are a normal part of everyday life. All in all, this study revealed aspects related to the different ways in which the children intuitively positioned themselves and drew upon various genres in front of the webcam.

### 5.2   Implications on HCI research and practice involving videos and/or diaries

This study wishes to broaden the HCI research conception of the nature of video productions and diaries created by research subjects. Besides providing data on users, user experience or usage habits,

videos and diaries can reveal additional information on research subjects' positioning and genre repertoire available and usable for the self-presentation and continuous identity-construction taking place. Studies relying on the discourse perspective have already brought up how video productions by young people allow them to represent themselves and to explore and construct their identities, relying on forms and conventions of popular culture but also being influenced by certain institutional conditions. In these creations, the researcher or observer is always present, overtly or covertly, as part of the assumed audience. Also in ICT research it has been shown that technologies create conditions for users' identity construction, expression and performance (Light 2011, McDonough 1999, Oulasvirta and Blom 2007, Van House 2011), but technologies may also be modified by users to reflect their identities (Akah and Bardzell 2010, Alvarez 2008, Light 2011, Oulasvirta and Blom 2007). Related to children, some technologies have also been designed to allow identity expression, exploration and construction (Bers et al. 2001, Bers and Cassell 1998, Brynskov and Ludvigsen 2006, Komlodi et al. 2007). In line with these studies, this paper has illustrated how the producers of the video diaries (i.e. children in this study) took different subject positions and utilized and drew inspiration from their understandings of different genres when fulfilling their task. The main contribution of our analysis is a deepened understanding of the method in question.

HCI research has used diary type of activities for collecting research data and for understanding the user. Our study differs from those studies as the children made video clips of themselves talking to the camera about issues related to their technology use at the end of the day. In the HCI diary studies, the video clips or other material are typically used to record situated action rather than to let the subjects give their own accounts of the events. Our study follows the video diary method more common within other disciplines (e.g., Buchwald et al., 2009; Noyes, 2004), but despite the difference, we claim that the video or other data captured by the research subjects within HCI research could also be viewed through the discourse lens discussed in this paper. It seems that in previous HCI research the multifaceted nature of the received qualitative data has not been fully appreciated. In the HCI literature, the (video) diary has been positioned as a method for gathering longitudinal, authentic, detailed and contextual 'facts' as data for research or design purposes without the researchers' presence in the data collection process (e.g., Carter and Mankoff, 2005; Czerwinski et al., 2004; Lichtner et al., 2009; Markopoulos et al., 2008; O'Hara et al., 2006; Sohn et al., 2008). We do not argue that such data could or should not be gathered but we point out that a careful analysis of the gained data may reveal that the 'researcher' may still be implicitly present and addressed in these creations that are framed in a certain way. The research subjects may, thus, have produced the data within particular frames of reference, revealing or emphasizing certain kinds of issues about themselves and constructing and exploring certain kinds of identities for themselves, consciously or unconsciously. The video diary method inevitably offers us certain kinds of performances, targeting certain types of audiences.

We emphasize that asking users to record video clips with some predefined purpose should not be seen as a straightforward assignment for the users. Despite the amount of guidance and instructions given, the situation of data gathering, i.e. the production of the video clips by the research subjects themselves as windows to an issue at hand, is always more or less uncontrolled (e.g., Buchwald et al., 2009; Carter and Mankoff, 2005; Quadri et al., 2007). It can be seen in our data, for example, that the research subjects may be willing to do their task according to the instructions but still apply them in their own way. Our data explicitly show the dynamic nature of this type of video production, i.e.

the variety of interpretations that the research subjects might have, depending on their (historically developed) understandings related to the subject at hand and within the social arrangements with others with whom they consider themselves to be acting at the moment of data production. Taking different kinds of subject positions while continuously constructing identities is a natural part of human life, not just related to children, but to people in general (Gee, 2005; Gibson, 2005; Pini, 2001). Regarding the uncontrollability of data gathering of this kind, it has already been noted that a reflective interview with the research subjects is useful after the diary type of data gathering to gain more in-depth insights and to supplement data that is incomplete or otherwise not dealing with the subject in a useful way (e.g., Lichtner et al., 2009; Markopoulos et al., 2008; O'Hara et al., 2006; O'Hara et al., 2007). All in all, we emphasize that in order to embrace the full potential of the video diary method, i.e. to further enrich the value of the method, researchers need to understand and make use of its natural dynamics. Instead of treating the data only as a collection of 'objective' facts, even though this is one way of using video diaries as well, this study highlights the importance of seeing the richness and possibilities of the data as a collection of multimodal, situated performances in place, produced within the culturally and historically formed social framework at a particular time. When considering the video diary data as reflections of their producers' life, through the discourse lens presented in this paper, it is possible see the data as a rich source revealing issues related to the social attachments, life contexts, histories and cultures of the producers, potentially leading to innovative new design insights.

## 5.3    Implications on participatory research and design with children

This paper provides some special insights into doing participatory research and design with children. Even though the video diary data we received from the children was not initially very rich or detailed and not all children had followed the instructions very carefully, we still believe that video and diary studies with children are valuable. Data on child users, on their habits of use and on the problems encountered with a particular technology under evaluation may be gathered, but these creations, be they paper based diaries, video diaries or video clips recorded on the phenomena of interest by the children themselves, all provide multifaceted *in situ* data within the culturally and historically formed social framework at the time of their production.

We want to highlight that the usefulness of video diary studies depends on the needs of the research or design effort in question, as well as on the age of the children, the guidance given and the motivation to participate (see also e.g., Markopoulos et al., 2008). In the case of children, their intellectual abilities and cognitive development should be taken into account when planning for the research. The capacity to self-reflection is seen as a developmental competence, which does not fully emerge until in adolescence (Barkai and Rappaport, 2011). Markopoulos and colleagues (2008) also maintain that children under 12 years do not usually have the ability to describe and reason about abstract concepts or to self-reflect. Video data capturing and diary keeping for design or research purposes has been carried out with clearly younger age groups. However, the researchers should keep in mind children's abilities and associated limitations. In our case, it was evident that children of 10–11 years were familiar with relevant cultural phenomena and conventions and able to draw upon those resources (in line with Buchwald et al., 2009; Chan, 2006; Noyes, 2004; Potter, 2005; Sefton-Green, 2006; Winnie, 2010) and also very confident in their technology use.

However, this type of data gathering may be too tedious a practice for children, which has been indicated also by previous research (Czerwinski et al., 2004). The length and the amount of the video clips we gained from the children also point to the problem of this kind of data gathering easily becoming too burdensome for the child participants. Our results also indicate that following researchers' instructions literally might be difficult for children of this age. When children either misunderstand the instructions provided or are not motivated to accomplish the possibly difficult or boring task, they may resort to 'satisficing' (Krosnick, 1991), a phenomenon often seen in connection with answering survey questions, where children provide just some superficial response without putting their mind to the task (see e.g., Read and MacFarlane, 2006). Situations in which children do not know how to approach the task, can also be seen as *unfocused*, as the negotiation of meaning is limited due to distance, medium of communication and unknown audience. As a contrast, there are *focused* situations taking place, often face to face, when "mutual sense making among the participants" is easier to achieve (Goffman, 1963; Goffman, 1971; Scollon and Scollon, 1981; Scollon and Scollon, 1984). Children's struggle in some situations for finding a suitable orientation may be understood on the basis of this distinction – the video diary as a medium may in this sense place the child in a situation too unfocused to quickly decide on the approach to the diary production.

In an ideal video diary production situation, the research subjects would put themselves into the position of a co-researcher, observing and reporting, i.e. understanding what type of data is valuable for those using the video clips later. However, our data shows that despite the instructions and motivation provided by researchers, the subjects also make their own interpretations on why to bother and how. Based on our experiences, we suggest that in addition to offering more advice and guidance for the children, valuable data could also be gained by letting children just to have some fun; by encouraging the children to be creative, to play and to have fun, we think we might have increased the amount and richness of our data perhaps with even more positions and genres. Moreover, although the school context and task somewhat resembling a school assignment made the task relatively natural for the children to accomplish, it might be that if conducted totally out of school context the positions taken by the children and the genres drawn upon might have been different in many ways (consider, for example, positions related to their family, friends and leisure clubs, and genres such as training blogs, letter/postcard writing, travel accounts, evening stories, prayers and family (photo) albums). We also wish to emphasize that children's identity expression, exploration and construction have been seen as natural and support for them as beneficial in itself (e.g., Bers et al., 2001, Bers and Cassell, 1998, Brynskov and Ludvigsen, 2006, Komlodi et al., 2007) due to which we definitely do not want to recommend that other researchers should try to restrict or avoid this entirely, but instead to acknowledge its existence.

When planning to use video diaries for the purposes of data gathering, one can still consider to what extent and how it could be possible and reasonable to control or guide the research subjects, especially children, on such orienting issues as subject position, audience, narrative, genre, and type of stage and performance expected. We suggest that in some cases, to gain better targeted research data (in line with Carter et al., 2010, for example), instead of minimizing their influence on the data, HCI researchers and designers could actually give more focused guidelines for the research subjects, to adopt certain kinds of ready-made subject positions and genres to play with, by describing in detail what is expected from them (see e.g., Verhaegh et al., 2006). As our results indicate, the subjects will adopt some positions and genres anyway, which could be leaned on as a natural part of

their video production. On the other hand, with more focused guidelines it might also be possible to avoid those positions that researchers think to be too limiting. Based on our data, it seemed that within the 'news broadcast genre' information was presented as 'facts' and numbers, while within the 'diary genre' more personal and intimate accounts were offered, relating to one's feelings and experiences, and within the 'stage performance genre' entertaining and funny aspects were emphasized. By deliberately choosing different genres, researchers or designers might try to gain particular kind of information for their particular research or design purposes. Moreover, one could consider also what the research subjects associate with those genres. For example with the 'news broadcast genre' it might be possible to achieve information on what the research subjects consider new and interesting, worth releasing as a piece of news; the 'stage performance genre' might reveal what is considered to be funny and interesting for the peers; and with the 'narrative genre' it might be possible to gain information of what the research subjects consider attractive or exciting. The 'school homework genre' could be utilised for getting the work done neatly and on time, also showing what things research subjects relate with duties.

Using genres and positions as described above is one possible way to help research subjects to see things differently and could be used for innovation purposes or for understanding user experience or technology adoption, for example. The variety of possible positions and genres could also be made visible to the research subjects as a 'toolset' from which one could choose one's own favourite. This toolset could also include general suggestions and ideas such as "you can edit the video if you like by adding text, pictures or sounds". In addition, while in our case the children produced same types of video clips each day, a set of several different style descriptions could be created and researchers could guide the research subjects to follow a different style each day. It is the objectives of the study that indicate which genres and positions serve best the research purposes (e.g., a news anchor, a diarist, a stage performer, a detective, a scientist). Positions and genres can be utilised with other data collection methods as well, not only in video diaries. However, it remains to be seen how motivating children perceive this type of toolset of ready-made genres and positions. Furthermore, one should always keep in mind that due to the dynamics of the video diary method, the adoption of suggested positions and genres can never be totally directed, and that the intent is not to influence the research subjects' free thoughts (cf. Mackay, 1995).

We also suggest that conducting a pilot study is beneficial in checking how the study setup works, i.e., whether there are unforeseen problems related to the setup (e.g., children's partial understandings of the instructions, inappropriate experiment length, strenuosity of the task leading to poor task-accomplishment, shortages of the prompts and stimulations provided). All this affects the quality of the received data. If we were to conduct a similar study again, we would definitely invest in even more careful planning of the experiment from the point of view of nexus analysis (see section 5.4.), and try to make the experiment as fun for children as possible to lessen or even eliminate the tediousness of children's work. We would still use school work as a setting, agreeing with the teacher that diary making is part of children's homework, but not increasing their daily workload. We would give children more guidance in the form of genres and positions suitable for the experiment, using two weeks for the experiment instead of only one to give children more calendar time to work with the experiment, but having the same amount of work as in this study, and definitely try out the applicability of the assignments in advance.

## 5.4 Reflections on the use of nexus analysis as a research framework

This section reflects on the use of nexus analysis, our research framework in this multidisciplinary research effort. Even though qualitative methods are widely used in HCI research and researchers endeavour to describe their research data-collection in detail, it is often the case that the process of data analysis is not portrayed very precisely and the treatment of data relies on a rather straightforward content analysis. In many cases, this is sufficient enough, but on the other hand, the use of more sophisticated data analysis methods might yield richer and more in-depth understanding of the phenomena at hand, in this case particularly of the use of the video diary method. Nexus analysis is the base of our whole research effort but in this study it particularly guided us during the multidisciplinary process of data analysis. Applying nexus analysis and the associated discourse perspective in the treatment of our data helped us to see that we actually had much richer data than it seemed on the surface. Through nexus analysis it was possible to open up the situations of video diary production as social action involving various participants with their roles in the action (interaction order, historical body) and the discourses cycling within that scene (discourses in place) (for a detailed description of the analysis procedure, see section 3.3.). In addition to gaining some pieces of facts of children's technology use, we gained in-depth understandings on how the children approached the task and used the method in question.

By utilizing the concept of **interaction order**, we were able to see the subject positions taken by the video diarists in relation to their assumed audiences. Those subject positions functioned as 'peepholes' to the quickly changing participation frameworks on different levels, including the teacher, the researchers, the parents, sisters and brothers, peers, and other potential audiences. Positioned in front of the webcam, the children were negotiating their own identities as members of these networks, at the same time constructing the assignment of observing their own technology use and reporting it through the video diary.

The concept of **historical body** led us to consider the genre repertoire available for the children to rely on. The data showed that producing the video entries seemed to be a fairly easy task for the children. As school pupils, children have been accultured into the school community and as the assignment came from the direction of the school, it was in many cases accomplished obediently as a school assignment should be. Various institutional conditions are always present in creations of this kind (Chan, 2006), and in this case the task was quite easily associated as a school assignment. Even if some of the children made fun of the video diary situation, most of them seemed to take it as self-evident. In addition, nexus analysis from this perspective led us to identify other genres invoked by the children, the children having enough understanding also of those genres to be able to utilize them as resources. Also, the ease and spontaneity with which the children used technology to produce their videos can be related to the high level of technology in Finnish homes and schools. The critics may say that we as researchers have also our own culturally and historically developed lenses through which we make our interpretations of these genres identified. However, instead of seeing this as a limitation of our work, we believe that the range of positions and genres that our multidisciplinary research group was able to identify actually demonstrated the value of nexus analysis in enriching our qualitative analysis of the video clips.

Furthermore, all these creations were produced in certain time and place. As for the **discourses in place**, in making interpretations on the subject positions adopted and genres invoked we relied not only on language use but also made observations on the material world and multimodal means of meaning making, e.g., facial expressions, voice tone, gaze, gestures and movement. Furthermore, our observations concerned also the material objects and surroundings involved in producing the video diaries. Many children had made notes that were relied on during the performance. This implies that the children were well prepared and had taken the task quite seriously, as doing homework assignments and presenting news broadcasts, for example. It also seemed that the video diaries were recorded in the same places where children usually do their homework, i.e. in their own rooms. If the diary activity took place in a more open place, it was usual that the other family members somehow participated in the action. The diaries were also usually produced during evening time, as homework assignments and diaries usually are. However, some of them were created in the morning, which might not be an extraordinary time either for some children to finish their homework. Interestingly, numerous clips were sometimes recorded during the same evening, the child pretending in each clip s/he was creating the recording during the evening of the reported day, not knowing that traces such as timestamps would be accessible for the researchers. Children also transformed document names to imply a daily sequence for the diary entries while the recordings were, in fact, made during one evening. This shows creative application of new 'tools' in doing their homework (see Lemke, 2005). It might also indicate a typical practice of doing homework assignments, i.e. just before the deadline.

We further recommend that the researchers let the cycles of engaging, navigating and changing the nexus of practice guide the research efforts more broadly. This study involves particularly the navigating phase of our multidisciplinary research effort inquiring children's participation in their technology-rich environments, while the engaging phase has been focused on in our earlier studies (e.g., delineating the social actions to be studied, searching for key actors and potential informants as well as becoming identified as researchers within the community being studied). Changing the nexus of practice inevitably takes place during any research intervention, from the initial stages even, but it could also be collaboratively planned with the research subjects to solve or decrease the impact of some social problem or issue. We suggest that it would be useful for researchers to consider issues related to the historical body and interaction order on the practice in focus before the data are collected. This would make it possible for the researchers to guide the research subjects to produce data that would be more relevant and useful in relation to the research objectives. For example, the researchers could try to take into account what kind of memories, experiences and histories might be connected with the task they are offering for the research subjects to accomplish and how those might guide the research subjects to position themselves in carrying out the task. In addition, the potential participants during the task (audiences, co-creators, bystanders etc.), the relationships among them and their influence on the resultant outcome could all be considered before the task assignment. In addition, the researchers could acknowledge even in the research planning phase that the effort will lead to changing the nexus of practice of interest, by initiating reflection by the research subjects if not anything else.

However, nexus analysis does entail certain limitations. It is a relatively complex ensemble that might not be particularly easy to comprehend and apply. For smaller scale studies, it might provide too complex of a conceptual apparatus to utilize and too time-consuming in relation to data amount (see Sanderson and Fisher, 1994), especially if the researchers have not previously used similar type

of analysis methods. For multidisciplinary research groups familiar with discourse studies, trying to understand some rather complex phenomenon, however, it provides a highly valuable and comprehensive strategy for research, extending the analytic focus from language use to social action across multiple timescales. We wish to stress, however, that in order to use video diary as a data collection method with children, it is not necessary to use nexus analysis for designing the study and analyzing the data. More simple data analysis methods can definitely be used as well and genres and positions still used to guide data collection in order to get particular kind of information.

## 6    CONCLUSIONS

This paper examined video diary material gathered from a group of 10–11-year-old children with a research focus on what kind of insights a discourse lens can provide for the analysis of video diaries produced by children. After a careful analysis, the diaries offered fascinating glimpses into how children performed their task. We gained very rich information on their ways of positioning themselves and the audience in front of the webcam. It also became visible that the use of a laptop to do homework is quite natural and easy for children of this age. Their relationship with technology shows them as 'digital natives', i.e. members of the generation that have lived in the technology-rich world from the beginning (Prensky, 2001). Based on our empirical analysis this paper identified seven subject positions that the children had adopted when creating their video diaries, and five genres that the children had invoked during the production. It was also noted that the children smoothly moved between the positions and genres, sometimes changing them many times even during one video clip.

This paper, inspired by the viewpoints presented within discourse studies, wishes to broaden the HCI research conception of the nature of video productions and diaries produced by research subjects, and to give HCI researchers additional tools for data collection and analysis. We wish to illustrate that also in the HCI field, in addition to providing objective data on users, user experience or habits of use, video productions and diaries may allow the researcher to gain glimpses into research subjects' positioning as co-researchers, as well as into the self-presentation and continuous identity-construction taking place during video production. These results can be used to inform further research and design efforts on the nature of data collection situations with child research partners, especially if the researchers or designers wish to consider ways to delineate the range of production approaches among the children in order to gain a particular type of data.

The results have some limitations to be noted. The data were not originally gathered for the purpose of this kind of analysis. The analytic focus was revealed through our inductive, collaborative data analysis, as is quite common in qualitative research in general. We feel that our case was quite a typical data gathering and analysis situation when conducting qualitative research for understanding a phenomenon better; the data are allowed to 'speak' during the data analysis, so what is actually interesting in the data gathered is determined only after the analysis. Our data gathering procedure might have been somehow different if we had had this research focus to begin with. However, we cannot at the moment identify any significant issue we would have done differently from this perspective. In addition, even though through the present study we gained very rich information on children's relationship with and use of this kind of video technology, we note that with a similar type of careful analysis of the same data from the viewpoint of the original assignment, it would probably

be possible to gain additional rich insights into children's technology use. Furthermore, the original assignment, obviously, affected the result even though we wish to emphasize that video diaries cannot be totally controlled or their content and nature predefined. The material was collected from only one class in one school. Naturally, more material could be gathered from different settings and with differing assignments. Also the age group should be taken into account: both older and younger children could be invited to take part not to mention the adults; our current results concern only the use of video diaries with children. The influence of gender could also be examined in relation to these video diaries; the data implied that such an analysis could provide interesting results but it was beyond the scope of this paper. Moreover, it would be interesting to invite children in the role of a researcher to produce diaries of this kind and to observe how this affects the creations, if at all. Finally, two closely related research areas of interest have been left out of our literature study: The field of storytelling and children was excluded as its aim has rather been to empower children to create and not to gather understandings of children's everyday life in relation to technology, or discuss the functionality of the method itself, as was the aim in our study (see e.g., Cassell and Ryokoiai, 2001; Di Blas and Boretti, 2009). Furthermore, research on cultural or technological probes (e.g., Hutchinson et al., 2003) was excluded unless it explicitly dealt with diaries as well (as was the case in Labrune and Mackay, 2005 and Riekhoff and Markopoulos, 2008), as there already is a large body of research related to the use of probes in HCI research and practice, impossible to be briefly reviewed in this paper. On the other hand, we think that the results of this study should be very interesting and useful also from the viewpoint of researchers using cultural or technological probes.

## ACKNOWLEDGEMENTS

## REFERENCES

Akah, B., Bardzell, S., 2010. Empowering products: personal identity through the act of appropriation. In: Proceedings of CHI'10 Extended Abstracts on Human Factors in Computing System. ACM Press, New York, pp. 4021-4026.

Alvarez, R., 2001. "It was a great system". Face-work and the discursive construction of technology during information systems development. Information Technology & People 14 (4), 358-405.

Alvarez, R., 2002. Confessions of an information worker: a critical analysis of information requirements discourse. Information and Organization 12 (2), 85-107.

Alvarez, R., 2008. Examining technology, structure and identity during an Enterprise System implementation. Information Systems Journal 18, 203–224.

Barkai, A.R., Rappaport, N., 2011. A psychiatric perspective on narratives of self-reflection in resilient adolescents. Adolescent Psychiatry 1 (1), 46–53.

Bazerman, C., 1997. Discursively structured activities. Mind, Culture and Activity 4 (4), 296–308.

Bazerman, C., Little, J., Chavkin, T., 2003. The production of information for genred acticity spaces: informational motives and consequences of the environmental impact statement. Written Communication 20 (4), 455–477.

Bazerman, C., Prior, P., 2005. Participating in emergent socioliterate worlds. Genre, disciplinarity, interdisciplinarity. In: Beach, R., Green, J., Kamil, M., Shanahan, T. (Eds.), Multidisciplinary Perspectives on Literacy Research. Hampton Press, Creskill, NJ, pp. 133–178.

Bers, M., Cassell, J., 1998. Interactive Storytelling Systems for Children: Using Technology to Explore Language and Identity. Journal of Interactive Learning Research 9 (2), 183-215.

Bers, M., Gonzalez-Heydrich, J., DeMaso, D., 2001. Identity construction environments: supporting a virtual therapeutic community of pediatric patients undergoing dialysis. In: Proceedings of the CHI'01. ACM Press, New York, pp. 380-387.

Brynskov, M., Ludvigsen, L., 2006. Mock games: a new genre of pervasive play. In: Proceedings of the DIS2006. ACM Press, New York, pp. 169-178.

Buchwald, D., Schantz-Lauresen, B., Delmar, C., 2009. Video diary data collection in research with children. An alternative method. International Journal of Qualitative Methods 8 (1), 12–20.

Buckingham D., Banaji, S., Burn, A., Carr, D., Cranmer, S., Willett, R., 2005. The Media Literacy of Children and Young People: A Review of the Research Literature. Ofcom, London. Available from: <http://www.ofcom.org.uk> (accessed 15.03.11).

Burnett, K.E., McKinley, G., 1998. Modelling information seeking. Interacting with Computers 10 (3), 285-302.

Büscher, M., 2005. Social life under the microscope? Sociological Research Online 10 (1). Available from: <http://www.socresonline.org.uk/10/1/buscher.html> (accessed 15.03.11).

Carroll, J., Howard, S., Vetere, F., Peck, J., Murphy, J., 2001. Identity, power and fragmentation in Cyberspace: technology appropriation by young people. In: Proceedings of Australian Conference on Information Systems, paper 6. Coffs Harbour, December 2001.

Carter, S., Doherty, J., Adcock, J., Branham, S., 2010. NudgeCam: toward targeted, higher quality media capture. In: Proceedings of MM'10, ACM Press, New York, pp. 615–618.

Carter, S., Mankoff, J., 2005. When participants do the capturing: the role of media in diary studies. In: Proceedings of CHI'05, ACM Press, New York, pp. 899–908.

Carter, S., Mankoff, J., Heer, J., 2007. Momento: support for situated ubicomp experimentation. In: Proceedings of CHI'07, ACM Press, New York, pp. 125–134.

Cassell, J., Ryokoiai, K., 2001. Making space for voice: Technologies to support children fantasy and storytelling. Personal and Ubiquitous Computing 5 (3), 169–190.

Chan, C., 2006. Youth voice? Whose voice? Young people and youth media practice in Hong Kong. McGill Journal of Education 41 (3), 15–225.

Czerwinski, M., Horvitz, E., Wilhite, S., 2004. A diary study of task switching and interruptions. In: Proceedings of CHI'04, ACM Press, New York, pp. 175–182.

Davies, B., Harré, R., 1999. Positioning and personhood. In: Harré, R., Langenhove, L. V. (Eds.), Positioning Theory. Blackwell Publishers, Massachusetts, USA, pp. 32–52.

Devitt, A.J., 1993. Generalizing about genre: new conceptions of an old concept. College Composition and Communication 44 (4), 573–586.

Di Blas, N., Boretti, B., 2009. Interactive storytelling in pre-school, a case-study. In: Proceedings of IDC'09, ACM Press, New York, pp. 44–51.

Dickie, C., Vertegaal, R., Shell, J.S., Sohn, C., Cheng, D., Aoudeh, O., 2004. Eye contact sensing glasses for attention-sensitive wearable video blogging. In Proceedings of CHI'04, ACM Press, New York, pp. 769–770.

Drew, P., Sorjonen, M.-L., 1997. Institutional dialogue. In: Van Dijk, T.A. (Ed.), Discourse as Social Interaction. Discourse Studies 2. A Multidisciplinary Introduction. Sage, London, pp. 92–118.

Druin, A., Solomon, C., 1996. Designing Multimedia Environments for Children. Wiley & Sons, New York, USA.

Duveskog, M., Kemppainen, K., Bednarik, R., Sutinen, E., 2009. Designing a story-based platform for HIV and AIDS counseling with Tanzanian children. In: Proceedings of IDC'09, ACM Press, New York, pp. 27–35.

Eldridge, M., Lamming, M., Flynn, M., 1992. Does a video diary help recall? In: People and Computers VII: Proceedings of HCI 92, University Press, Cambridge pp. 257–269.

Erickson, T. (1997). Social interaction on the net: virtual community as participatory. In: 30th Hawaii International Conference on System Sciences (HICSS) Vol. 6: Digital Documents. Available from: <http://doi.ieeecomputersociety.org/10.1109/HICSS.1997.665480>, pp.13–21.

Finken, S., 2003. Discursive conditions of knowledge production within cooperative design. Scandinavian Journal of Information Systems 15, 57-72.

Fraser, K., Rodden, T., O'Malley, C., 2006. Home-school technologies: considering the family. In: Proceedings of IDC'06, ACM Press, New York, pp. 153–156

Gee, J.P., 2005. An Introduction to Discourse Analysis. Theory and Method. Routledge, New York.

Gibson, B., 2005. Co-producing video diaries: The presence of the "absent" researcher. International Journal of Qualitative Methods 4 (4), 34–43.

Goffman, E., 1963. Behavior in Public Places: Notes on the Social Organization of Gatherings. The Free Press, New York.

Goffman, E., 1971. Relations in Public: Microstudies of the Public Order. Harper and Row, New York.

Hutchinson, H., Mackay, W., Westerlund, B., Bederson, B., Druin, A., Plaisant, C., Beaudouin-Lafon, M., Conversy, S., Evans, H., Hansen, H., Roussel, N., Eiderbäck, B., Lindquist, S., Sundblad, Y., 2003. Technology probes: inspiring design for and with families. In: Proceedings of CHI'03, ACM Press, New York, pp. 17–24.

Intille, S., Kukla, C. Ma, X., 2002. Eliciting user preferences using image-based experience sampling and reflection. In: Proceedings of CHI, ACM Press, New York, pp. 738–739.

Jensen, J.J., Skov, M.B., 2005. A review of research methods in children's technology design. In: Proceedings of IDC 2005, ACM Press, New York, pp. 80–87.

Katzeff, C., Ware, V., 2006. Video storytelling as mediation of organizational learning. In: Proceedings of NordiCHI'06, ACM Press, New York, pp. 311–320.

Kawamura, T., Kono, Y., Kidode, M., 2002. Wearable interfaces for a video diary: towards memory retrieval, exchange, and transportation. In: Proceedings of ISWC'02, pp. 31–38.

Keating, E., 2005. Homo prostheticus: Problematizing the notions of activity and computer-mediated interaction. Discourse Studies 7 (4–5), 527–545.

Kilker, J., 1999. Conflict on Collaborative Design Teams. IEEE Technology and Society Magazine, Fall, 12-21.

Komlodi, A., Hou, W., Preece, J., Druin, A., Golub, E., Alburo, J., Liao, S., Elkiss, A., Resnik, P., 2007. Evaluating a cross-cultural children's online book community: Lessons learned for sociability, usability, and cultural exchange, Interacting with Computers 19 (4), 494-511.

Kress, G., 2003. Literacy in the New Media Age. Routledge, London.

Kress, G., Van Leeuwen, T., 2001. Multimodal Discourse. The Modes and Media of Contemporary Communication. Oxford University Press, Oxford.

Krosnick, J.A., 1991. Response strategies for coping with the cognitive demands of attitude measures in surveys. Applied Cognitive Psychology 5 (3), 213–236.

Labrune, J.-B., Mackay, W., 2005. Tangicam: Exploring observation tools for children. In: Proceedings of IDC'05, ACM Press, New York, pp. 95–102.

Lehtimäki, K., Rajanti, T., 2008. Documenting the ordinary: mobile digital photography as an agent of change in people's practices concerning storing and sharing of photography. In: Proceedings of NordiCHI'08, ACM Press, New York, pp. 499–502.

Lemke, J., 2005. Place, pace, and meanings: multimedia chronotopes. In: Norris, S., Jones., R.H. (Eds.), Discourse in Action, Introducing Mediated Discourse Analysis. Routledge, London, pp. 110-122.

Levina, N., 2005. Collaborating on Multi-party Information Systems Development Projects: A Collective Reflection-in-Action View. Information Systems Research 16 (2), 109-130.

Lichtner, V., Kounkou, A., Dotan, A., Kooken, J., Maiden, N., 2009. An online forum as a user diary for remote workplace evaluation of a work-integrated learning system. Ext. Abstracts CHI'09, ACM Press, New York, 2955–2970.

Light, A., 2011. HCI as heterodoxy: Technologies of identity and the queering of interaction with computers. Interacting with Computers 23 (5), 430-43

Lindström, M., Ståhl, A., Höök, K., Sundström, P., Laaksolahti, J., Combetto, M., Taylor, A., Bresin, R., 2006. Affective diary: designing for bodily expressiveness and self-reflection. In: Ext. Abstracts of CHI'06, ACM Press, New York, 1037–1042.

Mackay, W., 1995. Ethics, lies and videotape… In: Proceedings of CHI'95, ACM Press, New York, pp. 138-145.

Markopoulos, P., Bekker, M.M., 2003. On assessing usability testing methods for children. Interacting with Computers, 15 (2), 141–149.

Markopoulos, P., Read, J., MacFarlane, S., Höysniemi, J., 2008. Evaluating Children's Interactive Products: Principles and Practices for Interaction Designers. Morgan Kaufmann Publishers Inc., San Francisco.

McDonough, J.P., 1999. Designer selves: Construction of technologically mediated identity within graphical, multiuser virtual environments. Journal of the American Society for Information Science 50, 855–869.

Miller, C. R., 1984. Genre as social action. Quarterly Journal of Speech 70 (2), 151–167.

Moinian, F., 2006. The construction of identity on the Internet: Oops! I've left my diary open to the whole world! Childhood 13 (1), 49–68.

Mondada, L. 2006. Video recording as the reflexive preservation and configuration of phenomenal features for analysis. In: Knoblauch, H., Raab, J., Soeffner, H.-G., Schnettler, B. (Eds.), Video Analysis. Lang, Bern, pp. 51–67.

Morrow, V., 2001. Using qualitative methods to elicit young people's perspectives on their environments: some ideas for community health initiatives. Health Education Research 16 (3), 255–268.

Nielsen, S., 1999. Talking About Change: An Analysis of Participative Discourse Amongst IT Operations Personnel. Australian Computer Journal 31 (4), 102-109.

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Nishida, K., 1958. Intelligibility and the Philosophy of Nothingness. Maruzen, Tokyo.

Norris, S., 2004. Analyzing Multimodal Interaction. A Methodological Framework. Routledge, New York.

Noyes, A., 2004, Video diary: a method for exploring learning dispositions. Cambridge Journal of Education 34 (2), 193–209.

O'Hara, K., Black, A., Lipson, M., 2006. Everyday practices with mobile video telephony. In: Proceedings of CHI'06, ACM Press, New York, pp. 871–880.

O'Hara, K., Mitchell, A., Vorbau, A., 2007. Consuming video on mobile devices. In: Proceedings of CHI'07, ACM Press, New York, pp. 857–866.

Oulasvirta, A., Blom, J., 2008. Motivations in personalisation behaviour, Interacting with Computers 20 (1), 1-16.

Palen, L., Salzman M., 2002. Voice-mail diary studies for naturalistic data capture under mobile conditions. In: Proceedings of CSCW'02, ACM Press, New York, pp. 87–95.

Pini, M. 2001. Video diaries: questions of authenticity and fabrication. Screening the Past 13. Available from <http://www.latrobe.edu.au/screeningthepast/firstrelease/fr1201/mpfr13a.htm> (accessed 15.03.11).

Petrelli, D., van den Hoven, E., Whittaker, S., 2009. Making history: intentional capture of future memories. In: Proceedings of CHI'09, ACM Press, New York, pp. 1723–1732.

Potter, J., 2005. 'This brings back a lot of memories': A case study in the analysis of digital video production by young learners. Education, Communication & Information 5 (1), 5–23.

Potter, J., Wetherell, M., 1987. Discourse and Social Psychology: Beyond Attitudes and Behaviour. Sage, London.

Prensky, M., 2001. Digital natives, digital immigrants. On the Horizon 9 (5), 1–6.

Quadri, N., Bullen, P., Jefferies, A., 2007. Student diaries: using technology to produce alternative forms of feedback. In: Proceedings of the Second International Blended Learning Conference, University of Hertsfordshire, pp. 214–222. Available from < http://uhra.herts.ac.uk:8080/xmlui/bitstream/handle/2299/1720/901871.pdf?sequence=1> (accessed 15.03.11)

Read, J., MacFarlane, S., 2006. Using the Fun Toolkit and other survey methods to gather opinions in child computer interaction. In: Proceedings of IDC'06, ACM Press, New York, pp. 81–88.

Riekhoff, J., Markopoulos, P., 2008. Sampling young children's experiences with cultural probes: In: Proceedings of IDC'08, ACM Press, New York, pp. 145–148.

Rieman, J., 1993. The diary study: a workplace-oriented research tool to guide laboratory efforts. In: Proceedings of INTERCHI'93, ACM Press, New York, pp. 321–326.

Robertson, J., Nicholson, K., 2007. Adventure Author: a learning environment to support creative design. In: Proceedings of IDC'07, ACM Press, New York, pp. 37–44.

Russell, D., 1997. Rethinking genre in school and society: an activity theory analysis. Written Communication 14 (4), 504–554.

Sanderson, P.M., Fisher, C., 1994. Exploratory sequential data analysis: foundations. Human-Computer Interaction 9 (4), 251-317.

Sarkkinen, J., 2004. Examining a Planning Discourse: How a Manager Represents Issues Within a Planning Frame and How the Others Could Do the Same. In: Proceedings of Participatory Design Conference 2004. ACM Press, New York, pp. 74-82.

Sarkkinen, J., Karsten, H., 2005. Verbal and visual representations in task redesign: how different viewpoints enter into information systems design discussions. Information Systems Journal 15 (3), 181-211.

Scollon, R., 2001, Mediated Discourse: The Nexus of Practice. Routledge, London.

Scollon, R., Scollon, S.B.K., 1981. Narrative, Literacy and Face in Interethnic Communication. Ablex, New Jersey.

Scollon, R., Scollon, S.B.K., 1984. Cooking it up and Boiling it down: abstracts in Athabaskan children's story retellings. In: Tannen, D. (Ed.), Coherence in Spoken and Written Discourse. Ablex, New Jersey.

Scollon, R., Scollon, S.W., 2003. Discourses in Place: Language in the Material World. Routledge, London.

Scollon, R., Scollon, S.W., 2004. Nexus Analysis: Discourse and the Emerging Internet. Routledge, London.

Sefton-Green, J., 2006. Youth, technology, and media cultures. Review of Research in Education 30, 279–306.

Sellen, A., Fogg, A., Aitken, M., Hodges, S., Rother, C., Wood, K., 2007. Do life-logging technologies support memory for the past? An experimental study using Sensecam. In: Proceedings of CHI'07, ACM Press, New York, pp. 81–90.

Sohn, T., Li, K., Griswold, W., Hollan, J., 2008. A diary study of mobile information needs. In: Proceedings of CHI'08, ACM Press, New York, pp. 433–442.

Suoninen, E., 1999. Vuorovaikutuksen mikromaiseman analysoiminen. (Analyzing the microlandscape of interaction). In: Jokinen, A., Juhila, K., Suoninen, E. (Eds.), Diskurssianalyysi liikkeessä. (Discourse analysis on the move). Vastapaino, Tampere, pp. 101–125.

Tucker, S., 2004. The diary of the future: defining a self-documentation system with child design partners. In: Proceedings of IDC'04, ACM Press, New York, pp. 133–134.

Van House, N., 2011. Feminist HCI meets Facebook: Performativity and social networking sites. Interacting with Computers 23 (5), 422-429.

Verhaegh, J., Soute, I.A.C., Kessels, A.C.J.M., Markopoulos, P., 2006. On the design of Camelot, an outdoor game for children. In: Proceedings of IDC'06, ACM Press, New York, pp. 9–16.

Wade, B., Moore, M., 1986. Making meaningful choices: an investigation into young children's intonation patterns in storytelling. Educational Psychology 6 (1), 45–56

Winnie, S., 2010. Meaning representation in video outcomes of inquiry project, Computers & Education 55 (4), 1532–1541.